Naturally, this battery construction is also possible with other geometric cross-sectional shapes, e.g. round, square, rectangular, etc.

All the exemplary embodiments do not in any way restrict the subject matter of the invention.

Patent Claims

1. Battery of bipolar stack design, having a plurality of subcells accommodated in a gastight casing, a subcell having in each case two electrodes of different polarity and an electrolyte-impregnated separator, and an electrically conductive wall being positioned between electrodes of different polarity belonging to adjacent subcells, which connecting wall electronically connects these electrodes to one another and separates the electrolyte of one subcell from the electrolyte of an adjacent subcell, characterized in that all the subcells are connected to a common gas space (9), in that the electrolyte of a subcell is fixed in a defined quantity in the electrodes (6, 7) and the separator (5), in that the subcells are pressed onto one another by a continuously acting force, and in that the outer walls of the stack, which are designed as pressure plates, form the current-discharge poles (3, 4).

2. Battery according to Claim 1, characterized in that the battery is a nickel/metal hydride battery.

3. Battery according to Claim 1, characterized in that a positive electrode (7) is a fibrous-structure electrode which is filled with nickel hydroxide active compound.

4. Battery according to Claim 1, characterized in that the side of a positive electrode (7) which faces a connecting wall (8) is free of insulating covering layers and/or has an addition which increases the conductivity.

5. Battery according to Claim 1, characterized in that each of the negative electrodes (6) has a higher capacitance than the associated positive electrode (7).

6. Battery according to Claim 5, characterized in that the excess of negative capacitance of the negative electrodes (6) is preferably 50 to 150% of the capacitance of the associated positive electrode (7).

7. Battery according to Claim 1, characterized in that a negative electrode (6) has a metallic substrate material, in that the substrate material has a woven fabric and/or an expanded metal and/or a three-dimensional metal structure, and in that a plastic-bonded compound comprising a hydrogen storage alloy is introduced into the substrate material.

8. Battery according to Claim 1, characterized in that the negative electrodes (6) are pasted asymmetrically.

9. Battery according to Claim 8, characterized in that the compound faces the separator (5).

10. Battery according to Claim 1, characterized in that the negative electrodes (6) have a structure which allows gases to pass through them.

11. Battery according to Claim 1, characterized in that the centre of the stack formed from the subcells is designed as gas space (9).

12. Battery according to Claim 11, characterized in that the central gas space (9) has a tie rod for ensuring that the pressure is exerted.

13. Battery according to Claim 1, characterized in that the subcells are each connected to the common gas space (9) by means of at least one sealing ring, and in that these sealing rings prevent the passage of electrolyte and allow gas exchange with the common gas space (9).

14. Battery according to Claim 13, characterized in that the sealing rings consist of porous polytetrafluoroethylene.

15. Battery according to Claim 1, characterized in that the connecting walls (8), on their edges, have a tar-like coating material which prevents the electrolyte from creeping over.

16. Battery according to Claims 1 and 13, characterized in that the connecting walls (8), on their edges, have a rubber coating which prevents the electrolyte from creeping over.

17. Battery according to Claim 1, characterized in that the subcells have a porous felt body, and in that the felt bodies act as a store for excess electrolyte.

18. Battery according to Claim 1, characterized in that the electrodes (6, 7), the separators (5) and the connecting walls (8) are each in the form of individual plates or discs, in that the battery (1, 10) comprises a stack of these individual plates or discs, the pairs or positive (7) and negative electrodes (6) being stack, together with separator layers (5) and connecting walls (8), in a common gas space (9), the negative electrode (6) being coated with the active compound from only one side and/or the positive electrode (7), on the contact side, being free of active compound, electrical contact being effected only by the individual plates or discs being pressed onto one another.

19. Battery according to Claim 1, characterized in that the pressure between the components of the individual subcells and the subcells themselves is approximately 10 to 35 N/cm^2.

20. Battery according to Claim 1, characterized in that an elastic element is provided as pressure-exerting component for providing the pressure.

21. Battery according to Claim 1, characterized in that two end plates (14, 15), which are at a fixed distance from one another, are provided as pressure-exerting component for providing the pressure.

22. Battery according to Claim 1, characterized in that the boundary surfaces and/or edges of the metallic connecting wall (8) have a hydrophobic coating, preferably comprising one or more bituminous substances of good adhesion.

23. Battery according to Claim 1, characterized in that the stack which is formed from the subcells has a central passage (12), and in that the individual subcells are connected to the central passage (12) by porous connecting elements.

24. Battery according to Claim 23, characterized in that the central passage (12) has a porous tube (13).

25. Battery according to one of Claims 23 or 24, characterized in that a porous connecting element and/or a porous tube (13) consists of porous polytetrafluoroethylene.

26. Battery according to Claim 23, characterized in that the central passage (12) has a tie rod for relieving the load on the end plates (14, 15).

27. Method for producing a battery according to one of Claims 1 to 26, characterized in that the components are filled with electrolyte before being assembled.

28. Method for producing a battery according to one of Claims 1 to 26, characterized in that the individual plates are stack on top of one another and the stack is permanently pressed together during assembly.

29. Method for producing a battery according to one of Claims 1 to 26, characterized in that before it is put into use, the battery is evacuated and/or filled by flushing with hydrogen without pressure.